

SEQUENCE LISTING

<110> Hastings, Gregg et al.

<120> Novel Hyaluronan-Binding Proteins and Encoding Genes

<130> PF487

<140> Unassigned

<141> 1999-12-20

<150> 60/113,871

<151> 1998-12-23

<160> 37

<170> PatentIn Ver. 2.0

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Met Met Asp
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Gln Gly Cys Arg Glu Ile Leu Thr Thr Ala Gly Pro Phe Thr Val Leu
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Val Pro Ser Val Ser Ser Phe Ser Arg Thr Met Asn Ala Ser Leu
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Ala Gln Gln Leu Cys Arg Gln His Ile Ile Ala Gly Gln His Ile Leu
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Glu Asp Thr Arg Thr Gln Gln Thr Arg Arg Trp Trp Thr Leu Ala Gly
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Gln Glu Ile Thr Val Thr Phe Asn Gln Phe Thr Lys Tyr Ser Tyr Lys
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Tyr Lys Asp Gln Pro Gln Gln Thr Phe Asn Ile Tyr Lys Ala Asn Asn
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Ile Ala Ala Asn Gly Val Phe His Val Val Thr Gly Leu Arg Trp Gln
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Ala Pro Ser Gly Thr Pro Gly Asp Pro Lys Arg Thr Ile Gly Gln Ile
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Leu Ala Ser Thr Glu Ala Phe Ser Arg Phe Glu Thr Ile Leu Glu Asn			
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Cys Gly Leu Pro Ser Ile Leu Asp Gly Pro Gly Pro Phe Thr Val Phe			
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Ala Pro Ser Asn Glu Ala Val Asp Ser Leu Arg Asp Gly Arg Leu Ile			
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Tyr Leu Phe Thr Ala Gly Leu Ser Lys Leu Gln Glu Leu Val Arg Tyr			
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Gly Arg Ile Leu Thr Met Ala Asn Gln Val Leu Ala Val Asn Ile Ser			
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Val Asp Val Met Ala Ala Asn Gly Val Ile His Met Leu Asp Gly Ile			
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Leu Leu Pro Pro Thr Ile Leu Pro Ile Leu Pro Lys His Cys Ser Glu			
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Cys Lys Gly Phe Phe Gly Pro Asp Cys Thr Gln Cys Pro Gly Gly Phe			
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360	365	370	

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375							380						385				
atc	tgc	tcg	aac	cca	aac	aag	cat	gga	gag	caa	tgc	cag	gaa	gac	tgc		1378
Ile	Cys	Ser	Asn	Pro	Asn	Lys	His	Gly	Glu	Gln	Cys	Gln	Glu	Asp	Cys		
390							395						400				
ggc	tgt	gtc	cat	ggt	ctc	tgc	gac	aac	cgc	cca	ggc	agt	ggg	ggg	gtg		1426
Gly	Cys	Val	His	Gly	Leu	Cys	Asp	Asn	Arg	Pro	Gly	Ser	Gly	Gly	Val		
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Cys	Gln	Gln	Gly	Thr	Cys	Ala	Pro	Gly	Phe	Ser	Gly	Arg	Phe	Cys	Asn		
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Glu	Ser	Met	Gly	Asp	Cys	Gly	Pro	Thr	Gly	Leu	Ala	Gln	His	Cys	His		
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Leu	His	Ala	Arg	Cys	Val	Ser	Gln	Glu	Gly	Val	Ala	Arg	Cys	Arg	Cys		
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ctt	gat	ggc	ttt	gag	ggt	gat	ggc	ttc	tcc	tgc	aca	cct	agc	aac	ccc		1618
Leu	Asp	Gly	Phe	Glu	Gly	Asp	Gly	Phe	Ser	Cys	Thr	Pro	Ser	Asn	Pro		
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Cys	Ser	His	Pro	Asp	Arg	Gly	Gly	Cys	Ser	Glu	Asn	Ala	Glu	Cys	Val		
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Pro	Gly	Ser	Leu	Gly	Thr	His	His	Cys	Thr	Cys	His	Lys	Gly	Trp	Ser		
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Gly	Asp	Gly	Arg	Val	Cys	Val	Ala	Ile	Asp	Glu	Cys	Glu	Leu	Asp	Val		
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Arg	Gly	Gly	Cys	His	Thr	Asp	Ala	Leu	Cys	Ser	Tyr	Val	Gly	Pro	Gly		
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Gln	Ser	Arg	Cys	Thr	Cys	Lys	Leu	Gly	Phe	Ala	Gly	Asp	Gly	Tyr	Gln		
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Cys	Ser	Pro	Ile	Asp	Pro	Cys	Arg	Ala	Gly	Asn	Gly	Gly	Cys	His	Gly		
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ctc cag ggt gcc ctc ttc gag gag ctg gcc ccg ctg ggt ggg cag Leu Gln Gly Ala Leu Phe Glu Glu Leu Ala Arg Leu Gly Gly Gln 645	650	655	2146
gaa gtg gcc acc ctg aac ccc acc aca cgc tgg gag att cgc aac att Glu Val Ala Thr Leu Asn Pro Thr Thr Arg Trp Glu Ile Arg Asn Ile 660	665	670	2194
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ctt gcc acc aac ggt gtc cta cac atc ctc agc cag gtc tta ctg ccc Leu Ala Thr Asn Gly Val Leu His Ile Leu Ser Gln Val Leu Leu Pro 695	700	705	2290
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cca ctg gaa ggc ccc atg ctg gag gcc cct ggc cgc tcg ctg att ggt Pro Leu Glu Gly Pro Met Leu Glu Ala Pro Gly Arg Ser Leu Ile Gly 820	825	830	2674
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Leu Ser Gly Val Leu Thr Val Gly Ser Ser Arg Cys Leu His Ser His		
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Lys Lys Ile Gln Val Pro Asp Cys Cys Pro Gly Phe Phe Gly Thr Leu		
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Cys Glu Pro Cys Pro Gly Gly Leu Gly Gly Val Cys Ser Gly His Gly		
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Gln Cys Gln Asp Arg Phe Leu Gly Ser Gly Glu Cys His Cys His Glu		
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Thr Lys Val Ala Pro Gly Gln Arg Thr Cys Thr Cys Gln Asp Gly Tyr		
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1075		

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1655		1660		1665
ggc tat gaa ggg gat ggc cgt gtg tgt aca gtg gca gac ctg tgc cag Gly Tyr Glu Gly Asp Gly Arg Val Cys Thr Val Ala Asp Leu Cys Gln				5218
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gac ggg cat ggt ggc tgc agt gag cac gcc aac tgt agc cag gta gga Asp Gly His Gly Cys Ser Glu His Ala Asn Cys Ser Gln Val Gly				5266
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aca atg gtc act tgt acc tgc ctg ccc gac tac gag ggt gat ggc tgg Thr Met Val Thr Cys Thr Cys Leu Pro Asp Tyr Glu Gly Asp Gly Trp				5314
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tcg gaa cca cct gtg gac cgc tgc ttg ggc cag cca ccg ccc tgc cac Ser Glu Pro Pro Val Asp Arg Cys Leu Gly Gln Pro Pro Pro Cys His				5506
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tca gat gcc atg tgc act gac ctg cac ttc cag gag aaa cgg gct ggc				5554

Ser Asp Ala Met Cys Thr Asp Leu His Phe Gln Glu Lys Arg Ala Gly			
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Val Phe His Leu Gln Ala Thr Ser Gly Pro Tyr Gly Leu Asn Phe Ser			
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Glu Ala Glu Ala Ala Cys Glu Ala Gln Gly Ala Val Leu Ala Ser Phe			
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Gly Trp Leu Ala Asn Gly Ser Thr Ala His Pro Val Val Phe Pro Val			
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Ala Asp Cys Gly Asn Gly Arg Val Gly Ile Val Ser Leu Gly Ala Arg			
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Lys Asn Leu Ser Glu Arg Trp Asp Ala Tyr Cys Phe Arg Val Gln Asp			
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Val Ala Cys Arg Cys Arg Asn Gly Phe Val Gly Asp Gly Ile Ser Thr			
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Cys Asn Gly Lys Leu Leu Asp Val Leu Ala Ala Thr Ala Asn Phe Ser			
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Thr Phe Tyr Gly Met Leu Leu Gly Tyr Ala Asn Ala Thr Gln Arg Gly			
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Phe Val Pro Val Asn Glu Gly Phe Val Asp Asn Met Thr Leu Ser Gly			
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cca aac ttg gag ctg cat gcc tcc aac gcc acc ctc cta agt gcc aac			6130
Pro Asn Leu Glu Leu His Ala Ser Asn Ala Thr Leu Leu Ser Ala Asn			
1975	1980	1985	
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Ala Ser Gln Gly Lys Leu Leu Pro Ala His Ser Gly Leu Ser Leu Ile			
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Ile Ser Asp Ala Gly Pro Asp Asn Ser Ser Trp Ala Pro Val Ala Pro			
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Ser Tyr Lys Tyr Lys Asp Gln Pro Gln Thr Phe Asn Ile Tyr Lys
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Ala Asn Asn Ile Ala Ala Asn Gly Val Phe His Val Val Thr Gly Leu
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Arg Trp Gln Ala Pro Ser Gly Thr Pro Gly Asp Pro Lys Arg Thr Ile
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Gly Gln Ile Leu Ala Ser Thr Glu Ala Phe Ser Arg Phe Glu Thr Ile
 130 135 140

Leu Glu Asn Cys Gly Leu Pro Ser Ile Leu Asp Gly Pro Gly Pro Phe
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Thr Val Phe Ala Pro Ser Asn Glu Ala Val Asp Ser Leu Arg Asp Gly
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Arg Leu Ile Tyr Leu Phe Thr Ala Gly Leu Ser Lys Leu Gln Glu Leu
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Val Arg Tyr His Ile Tyr Asn His Gly Gln Leu Thr Val Glu Lys Leu
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Ile Ser Lys Gly Arg Ile Leu Thr Met Ala Asn Gln Val Leu Ala Val
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Asn Ile Ser Glu Glu Gly Arg Ile Leu Leu Gly Pro Glu Gly Val Pro
 225 230 235 240

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Asp Gly Ile Leu Leu Pro Pro Thr Ile Leu Pro Ile Leu Pro Lys His
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Cys Ser Glu Glu Gln His Lys Ile Val Ala Gly Ser Cys Val Asp Cys
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Gln Ala Leu Asn Thr Ser Thr Cys Pro Pro Asn Ser Val Lys Leu Asp
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Ile Phe Pro Lys Glu Cys Val Tyr Ile His Asp Pro Thr Gly Leu Asn
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Val Leu Lys Lys Gly Cys Ala Ser Tyr Cys Asn Gln Thr Ile Met Glu.
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Gln Gly Cys Cys Lys Gly Phe Phe Gly Pro Asp Cys Thr Gln Cys Pro
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Gln	Leu	Asp	Leu	Val	Pro	Ala	Phe	Ser	Leu	Phe	Arg	Glu	Leu	Leu	Gln
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1645

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280		
gcc acc ctc cta agt gcc aac gcc agc cag ggg aag ttg ctt ccg gcc		918
Ala Thr Leu Leu Ser Ala Asn Ala Ser Gln Gly Lys Leu Leu Pro Ala		
285	290	295
cac tca ggc ctc agc ctc atc atc agt gac gca ggc cct gac aac agt		966
His Ser Gly Leu Ser Leu Ile Ile Ser Asp Ala Gly Pro Asp Asn Ser		
300	305	310
tcc tgg gcc cct gtg gcc cca ggg aca gtt gtg gtt agc cgt atc att		1014
Ser Trp Ala Pro Val Ala Pro Gly Thr Val Val Val Ser Arg Ile Ile		
315	320	325
gtg tgg gac atc atg gcc ttc aat ggc atc atc cat gct ctg gcc agc		1062
Val Trp Asp Ile Met Ala Phe Asn Gly Ile Ile His Ala Leu Ala Ser		
330	335	340
ccc ctc ctg gca ccc cca cag ccc cag gca gtg ctg gcg cnt gaa gcc		1110
Pro Leu Leu Ala Pro Pro Gln Pro Gln Ala Val Leu Ala Xaa Glu Ala		

345	350	355	360	
cca cct gtg gcg gca ggc gtg ggg gct gtg ctt gcc gct gga gca ctg Pro Pro Val Ala Ala Gly Val Gly Ala Val Leu Ala Ala Gly Ala Leu 365 370 375				1158
ctt ggc ttg gtg gcc gga gct ctc tac ctc cgt gcc cga ggc aag ccc Leu Gly Leu Val Ala Gly Ala Leu Tyr Leu Arg Ala Arg Gly Lys Pro 380 385 390				1206
atg ggc ttt ggc ttc tct gcc ttc cag gcg gaa gat gat gat gct gat gac Met Gly Phe Gly Phe Ser Ala Phe Gln Ala Glu Asp Asp Ala Asp Asp 395 400 405				1254
gan ttc tca ccg tgg caa gaa ggg acc aac ccc acn ttg gtn tnt gtc Xaa Phe Ser Pro Trp Gln Glu Gly Thr Asn Pro Xaa Leu Xaa Xaa Val 410 415 420				1302
ccc aac cct gtc ttt ggc agc gac acc ttt tgt gaa ccc ttc gat gac Pro Asn Pro Val Phe Gly Ser Asp Thr Phe Cys Glu Pro Phe Asp Asp 425 430 435 440				1350
tca ctg ctg gag gag gac ttc cct gac acc cag agg atc ctc aca gtc Ser Leu Leu Glu Glu Asp Phe Pro Asp Thr Gln Arg Ile Leu Thr Val 445 450 455				1398
aag tga cgaggctggg gctgaaaagca gaagcatgca cagggaggag accantttta Lys				1454
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Glu His Ala Asn Cys Leu Ser Thr Gly Leu Asn Thr Arg Arg Cys Glu 35 40 45				
Cys His Ala Gly Tyr Val Gly Asp Gly Leu Gln Cys Leu Glu Glu Ser 50 55 60				
Glu Pro Pro Val Asp Arg Cys Leu Gly Gln Pro Pro Pro Cys His Ser 65 70 75 80				
Asp Ala Met Cys Thr Asp Leu His Phe Gln Glu Lys Arg Ala Gly Val 85 90 95				
Phe His Leu Gln Ala Thr Ser Gly Pro Tyr Gly Leu Asn Phe Ser Glu				

100	105	110
Ala Glu Ala Ala Cys Glu Ala Gln Gly Ala Val Leu Ala Ser Phe Pro		
115	120	125
Gln Leu Ser Ala Ala Gln Gln Leu Gly Phe His Leu Cys Leu Met Gly		
130	135	140
Trp Leu Ala Asn Gly Ser Thr Ala His Pro Val Val Phe Pro Val Ala		
145	150	155
Asp Cys Gly Asn Gly Arg Val Gly Ile Val Ser Leu Gly Ala Arg Lys		
165	170	175
Asn Leu Ser Glu Arg Trp Asp Ala Tyr Cys Phe Arg Val Gln Asp Val		
180	185	190
Ala Cys Arg Cys Arg Asn Gly Phe Val Gly Asp Gly Ile Ser Thr Cys		
195	200	205
Asn Gly Lys Leu Leu Asp Val Leu Ala Ala Thr Ala Asn Phe Ser Thr		
210	215	220
Phe Tyr Gly Met Leu Leu Gly Tyr Ala Asn Ala Thr Gln Arg Gly Leu		
225	230	235
Asp Phe Leu Asp Phe Leu Asp Asp Glu Leu Thr Tyr Lys Thr Leu Phe		
245	250	255
Val Pro Val Asn Glu Gly Phe Val Asp Asn Met Thr Leu Ser Gly Pro		
260	265	270
Asn Leu Glu Leu His Ala Ser Asn Ala Thr Leu Leu Ser Ala Asn Ala		
275	280	285
Ser Gln Gly Lys Leu Leu Pro Ala His Ser Gly Leu Ser Leu Ile Ile		
290	295	300
Ser Asp Ala Gly Pro Asp Asn Ser Ser Trp Ala Pro Val Ala Pro Gly		
305	310	315
Thr Val Val Val Ser Arg Ile Ile Val Trp Asp Ile Met Ala Phe Asn		
325	330	335
Gly Ile Ile His Ala Leu Ala Ser Pro Leu Leu Ala Pro Pro Gln Pro		
340	345	350
Gln Ala Val Leu Ala Xaa Glu Ala Pro Pro Val Ala Ala Gly Val Gly		
355	360	365
Ala Val Leu Ala Ala Gly Ala Leu Leu Gly Leu Val Ala Gly Ala Leu		
370	375	380
Tyr Leu Arg Ala Arg Gly Lys Pro Met Gly Phe Gly Phe Ser Ala Phe		
385	390	395
Gln Ala Glu Asp Asp Ala Asp Asp Xaa Phe Ser Pro Trp Gln Glu Gly		
405	410	415

Thr Asn Pro Xaa Leu Xaa Xaa Val Pro Asn Pro Val Phe Gly Ser Asp
 420 425 430

Thr Phe Cys Glu Pro Phe Asp Asp Ser Leu Leu Glu Glu Asp Phe Pro
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Asp Thr Gln Arg Ile Leu Thr Val Lys
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<211> 193

<212> PRT

<213> Homo sapiens

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Ala Ala Gly Val Tyr His Arg Ala Arg Ser Gly Lys Tyr Lys Thr Tyr
 20 25 30

Ala Ala Lys Ala Val Cys Gly Gly His Ala Thr Tyr Lys Ala Ala Arg
 35 40 45

Lys Gly His Val Cys Ala Ala Gly Trp Met Ala Lys Gly Arg Val Gly
 50 55 60

Tyr Val Lys Gly Asn Cys Gly Gly Lys Thr Gly Asp Tyr Gly Arg Asn
 65 70 75 80

Arg Ser Arg Trp Asp Ala Tyr Cys Tyr Asn His Ala Lys Cys Gly Gly
 85 90 95

Val Thr Asp Lys Arg Lys Ser Gly Asn Tyr Asp Asn Cys Tyr Trp His
 100 105 110

Arg Lys Tyr Gly Arg His Ser Asp Asp Asp Asp Gly Cys Ala Asp Tyr
 115 120 125

Val Tyr Asp Ser Tyr Asp Asp Val His Gly Val Gly Arg Tyr Cys Gly
 130 135 140

Asp Asp Asp Ser Thr Gly Asn Val Met Thr Lys Ser Asp Ala Ser Val
 145 150 155 160

Thr Ala Gly Gly Lys Tyr Val Ala Met Asp Val Ser Lys Ser Ser Gly
 165 170 175

Lys Asn Thr Ser Thr Ser Thr Gly Asn Lys Asn Ala Gly Arg Ser
 180 185 190

His

<210> 7

<211> 985

<212> DNA

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cctggggacg tttgccctgg ggccccagcc tggcccgggt caccctggca tgaggag	117
atg ggc ctg ttg ctc ctg gtc cca ttg ctc ctg ctg ccc ggc tcc tac Met Gly Leu Leu Leu Leu Val Pro Leu Leu Leu Pro Gly Ser Tyr	165
1 5 10 15	
gga ctg ccc ttc tac tac ggc ttc tac tac tcc aac agc gcc aac gac Gly Leu Pro Phe Tyr Tyr Gly Phe Tyr Ser Asn Ser Ala Asn Asp	213
20 25 30	
cag aac cta ggc aac ggt cat ggc aaa gac cta cnt aat gga gtg aag Gln Asn Leu Gly Asn Gly His Gly Lys Asp Leu Xaa Asn Gly Val Lys	261
35 40 45	
ctg gtg gtg gag aca ccc gag gag acc ctg ttc acc tac caa ggg gcc Leu Val Val Glu Thr Pro Glu Glu Thr Leu Phe Thr Tyr Gln Gly Ala	309
50 55 60	
agt gtg atc ctg ccc tgc cgc tac cgc tac gag ccg gcc ctg gtc tcc Ser Val Ile Leu Pro Cys Arg Tyr Arg Tyr Glu Pro Ala Leu Val Ser	357
65 70 75 80	
ccg cgg cgt gtg cgt gtc aaa tgg tgg aag ctg tcg gag aac ggg gcc Pro Arg Arg Val Arg Val Lys Trp Trp Lys Leu Ser Glu Asn Gly Ala	405
85 90 95	
cca gag aag gac gtg ctg gtg gcc atc ggg ctg agg cac cgc tcc ttt Pro Glu Lys Asp Val Leu Val Ala Ile Gly Leu Arg His Arg Ser Phe	453
100 105 110	
ggg gac tac caa ggc cgc gtg cac ctg cgg cag gac aaa gag cat gac Gly Asp Tyr Gln Gly Arg Val His Leu Arg Gln Asp Lys Glu His Asp	501
115 120 125	
gtc tcg ntg gag atc cag gnt ctg cgg ctg gag gac tat ggg cgt tac Val Ser Xaa Glu Ile Gln Xaa Leu Arg Leu Glu Asp Tyr Gly Arg Tyr	549
130 135 140	
cgc tgt gag gtc atn gac ggg ctg gag gat gaa agc ggt ctg gtg gag Arg Cys Glu Val Xaa Asp Gly Leu Glu Asp Glu Ser Gly Leu Val Glu	597
145 150 155 160	
ctg gag ctg cgg ggt gtg gtc ttt cct tac cag tcc ccc aac ggg cgc Leu Glu Leu Arg Gly Val Val Phe Pro Tyr Gln Ser Pro Asn Gly Arg	645
165 170 175	
tac cag ttc aac ttc cac gag ggc cag cag gtc tgt gca gag cag gct Tyr Gln Phe Asn Phe His Glu Gly Gln Gln Val Cys Ala Glu Gln Ala	693
180 185 190	
gcg gtg gtg gcc tcc ttt gag cag ctc ttc cgg gcc tgg gag gag ggc Ala Val Val Ala Ser Phe Glu Gln Leu Phe Arg Ala Trp Glu Glu Gly	741
195 200 205	
ctg gac tgg tgc aac gcg ggc tgg ctg cag gat gcc acg gtg cag tac Leu Asp Trp Cys Asn Ala Gly Trp Leu Gln Asp Ala Thr Val Gln Tyr	789
210 215 220	
ccc atc atg ttg ccc cgg cag ccc tgc ggt ggc ccg gac ctg gca cct	837

Pro Ile Met Leu Pro Arg Gln Pro Cys Gly Gly Pro Asp Leu Ala Pro			
225	230	235	240
ggc gtg cga agc tac ggc ccc cgc cac cgc ctg cac cgc tat gat			885
Gly Val Arg Ser Tyr Gly Pro Arg His Arg Arg Leu His Arg Tyr Asp			
245	250	255	
gta ttc tgc ttc gct act gcc ctc arg ggg cggtac tac ctg gan			933
Val Phe Cys Phe Ala Thr Ala Leu Xaa Gly Arg Val Tyr Tyr Leu Xaa			
260	265	270	
cac cct gag aan ctg acn ctg aca naa gca agg gaa gcc tgc caa gaa			981
His Pro Glu Xaa Leu Xaa Leu Thr Xaa Ala Arg Glu Ala Cys Gln Glu			
275	280	285	
aaa t			985
Lys			
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Gly Leu Pro Phe Tyr Tyr Gly Phe Tyr Tyr Ser Asn Ser Ala Asn Asp			
20	25	30	
Gln Asn Leu Gly Asn Gly His Gly Lys Asp Leu Xaa Asn Gly Val Lys			
35	40	45	
Leu Val Val Glu Thr Pro Glu Glu Thr Leu Phe Thr Tyr Gln Gly Ala			
50	55	60	
Ser Val Ile Leu Pro Cys Arg Tyr Arg Tyr Glu Pro Ala Leu Val Ser			
65	70	75	80
Pro Arg Arg Val Arg Val Lys Trp Trp Lys Leu Ser Glu Asn Gly Ala			
85	90	95	
Pro Glu Lys Asp Val Leu Val Ala Ile Gly Leu Arg His Arg Ser Phe			
100	105	110	
Gly Asp Tyr Gln Gly Arg Val His Leu Arg Gln Asp Lys Glu His Asp			
115	120	125	
Val Ser Xaa Glu Ile Gln Xaa Leu Arg Leu Glu Asp Tyr Gly Arg Tyr			
130	135	140	
Arg Cys Glu Val Xaa Asp Gly Leu Glu Asp Glu Ser Gly Leu Val Glu			
145	150	155	160
Leu Glu Leu Arg Gly Val Val Phe Pro Tyr Gln Ser Pro Asn Gly Arg			
165	170	175	
Tyr Gln Phe Asn Phe His Glu Gly Gln Gln Val Cys Ala Glu Gln Ala			

180

185

190

Ala Val Val Ala Ser Phe Glu Gln Leu Phe Arg Ala Trp Glu Glu Gly
 195 200 205

Leu Asp Trp Cys Asn Ala Gly Trp Leu Gln Asp Ala Thr Val Gln Tyr
 210 215 220

Pro Ile Met Leu Pro Arg Gln Pro Cys Gly Gly Pro Asp Leu Ala Pro
 225 230 235 240

Gly Val Arg Ser Tyr Gly Pro Arg His Arg Arg Leu His Arg Tyr Asp
 245 250 255

Val Phe Cys Phe Ala Thr Ala Leu Xaa Gly Arg Val Tyr Tyr Leu Xaa
 260 265 270

His Pro Glu Xaa Leu Xaa Leu Thr Xaa Ala Arg Glu Ala Cys Gln Glu
 275 280 285

Lys

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<211> 355

<212> PRT

<213> Homo sapiens

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 20 25 30

Gln Glu Glu Asn Gly Pro Arg Leu Leu Val Val Ala Glu Gln Ala Lys
 35 40 45

Ile Phe Ser Gln Arg Gly Gly Asn Val Thr Leu Pro Cys Lys Phe Tyr
 50 55 60

His Glu His Thr Ser Thr Ala Gly Ser Gly Thr His Lys Ile Arg Val
 65 70 75 80

Lys Trp Thr Lys Leu Thr Ser Asp Tyr Leu Lys Glu Val Asp Val Phe
 85 90 95

Val Ala Met Gly His His Arg Lys Ser Tyr Gly Lys Tyr Gln Gly Arg
 100 105 110

Val Phe Leu Arg Glu Ser Ser Glu Asn Asp Ala Ser Leu Ile Ile Thr
 115 120 125

Asn Ile Met Leu Glu Asp Tyr Gly Arg Tyr Lys Cys Glu Val Ile Glu
 130 135 140

Gly Leu Glu Asp Asp Thr Ala Val Val Ala Leu Asn Leu Glu Gly Val
 145 150 155 160

Val Phe Pro Tyr Ser Pro Arg Leu Gly Arg Tyr Asn Leu Asn Phe His
 165 170 175
 Glu Ala Gln Gln Ala Cys Leu Asp Gln Asp Ser Ile Ile Ala Ser Phe
 180 185 190
 Asp Gln Leu Tyr Glu Ala Trp Arg Ser Gly Leu Asp Trp Cys Asn Ala
 195 200 205
 Gly Trp Leu Ser Asp Gly Ser Val Gln Tyr Pro Ile Thr Lys Pro Arg
 210 215 220
 Glu Pro Cys Gly Gly Lys Asn Thr Val Pro Gly Val Arg Asn Tyr Gly
 225 230 235 240
 Phe Trp Asp Lys Glu Arg Ser Arg Tyr Asp Val Phe Cys Phe Thr Ser
 245 250 255
 Asn Phe Asn Gly Arg Phe Tyr Tyr Leu Ile His Pro Thr Lys Leu Thr
 260 265 270
 Tyr Asp Glu Ala Val Gln Ala Cys Leu Lys Asp Gly Ala Gln Ile Ala
 275 280 285
 Lys Val Gly Gln Ile Phe Ala Ala Trp Lys Leu Leu Gly Tyr Asp Arg
 290 295 300
 Cys Asp Ala Gly Trp Leu Ala Asp Gly Ser Val Arg Tyr Pro Ile Ser
 305 310 315 320
 Arg Pro Arg Lys Arg Cys Ser Pro Asn Glu Ala Ala Val Arg Phe Val
 325 330 335
 Gly Phe Pro Asp Lys Lys His Lys Leu Tyr Gly Val Tyr Cys Phe Arg
 340 345 350
 Ala Tyr Asn
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gacgggcaca gctgcacaga gatagacccc tgtgcagacg gccttaacgg agggtgtc 180
gagcacgcca cctgtaag atg aca ggc ccg ggc aag cac aag tgt gag tgt 231
          Met Thr Gly Pro Gly Lys His Lys Cys Glu Cys
          1           5            10
                                         20
                                         25
aaa agt cac tat gtc gga gat ggg ctg aac tgt gag ccg gag cag ctg 279
Lys Ser His Tyr Val Gly Asp Gly Leu Asn Cys Glu Pro Glu Gln Leu
          15
                                         20
                                         25

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ccc att gac cgc tgc tta cag gac aat ggg cag tgc cat gca gac gcc 327
 Pro Ile Asp Arg Cys Leu Gln Asp Asn Gly Gln Cys His Ala Asp Ala
 30 35 40

 aaa tgt gtc gac ctc cac ttc cag gat acc act gtt ggg gtg ttc cat 375
 Lys Cys Val Asp Leu His Phe Gln Asp Thr Thr Val Gly Val Phe His
 45 50 55

 cta cgc tcc cca ctg ggc cag tat aag ctg acc ttt gac aaa gcc aga 423
 Leu Arg Ser Pro Leu Gly Gln Tyr Lys Leu Thr Phe Asp Lys Ala Arg
 60 65 70 75

 gag gcc tgt gcc aac gaa gct gcg acc atg gca acc tac aac cag ctc 471
 Glu Ala Cys Ala Asn Glu Ala Ala Thr Met Ala Thr Tyr Asn Gln Leu
 80 85 90

 tcc tat nnc cag aag gcc aag tac cac ctg tgc tca gca ggc tgg ctg 519
 Ser Tyr Xaa Gln Lys Ala Lys Tyr His Leu Cys Ser Ala Gly Trp Leu
 95 100 105

 gag acc ggg cgg gtt gcc tac ccc aca gcc ttc gcc tcc cag aac tgt 567
 Glu Thr Gly Arg Val Ala Tyr Pro Thr Ala Phe Ala Ser Gln Asn Cys
 110 115 120

 ggc tct ggt gtg gtt ggg ata gtg gac tat gga cct aga ccc aac aag 615
 Gly Ser Gly Val Val Gly Ile Val Asp Tyr Gly Pro Arg Pro Asn Lys
 125 130 135

 agt gaa atg tgg gat gtc ttc tgc tat cgg atg aaa gat gtg aac tgc 663
 Ser Glu Met Trp Asp Val Phe Cys Tyr Arg Met Lys Asp Val Asn Cys
 140 145 150 155

 acc tnc aag gtg ggc tat gtg gga gat ggc ttc tca tac agt ggg aac 711
 Thr Xaa Lys Val Gly Tyr Val Gly Asp Gly Phe Ser Tyr Ser Gly Asn
 160 165 170

 ctg ctg cag gtc ctg atg tcc ttc ccc tca ctc aca aac ttc ctg acg 759
 Leu Leu Gln Val Leu Met Ser Phe Pro Ser Leu Thr Asn Phe Leu Thr
 175 180 185

 gaa gtg ctg gcc tat tcc aac agc tca gct cga ggc cgt gca ttt cta 807
 Glu Val Leu Ala Tyr Ser Asn Ser Ser Ala Arg Gly Arg Ala Phe Leu
 190 195 200

 gaa cac ctg act gac ctg tcc atc cgc ggc acc ctc ttt gtn cca cag 855
 Glu His Leu Thr Asp Leu Ser Ile Arg Gly Thr Leu Phe Xaa Pro Gln
 205 210 215

 aac agt ggg ctg ggg gag aat gag acc ttg tct ggg cgg gac atc gag 903
 Asn Ser Gly Leu Gly Glu Asn Glu Thr Leu Ser Gly Arg Asp Ile Glu
 220 225 230 235

 cac cac ctc gcc aat gtc agc atg ttt ttc tac aat gac ctt gtc aat 951
 His His Leu Ala Asn Val Ser Met Phe Phe Tyr Asn Asp Leu Val Asn
 240 245 250

 ggc acc acc ctgcaa acg agg ctg gga agc aag ctg ctc atc act gac 999
 Gly Thr Thr Leu Gln Thr Arg Leu Gly Ser Lys Leu Leu Ile Thr Asp

255

260

265

aga cag gac cca ctc cac ccg acg gag acc agg tgt gtt gat gga aga 1047
 Arg Gln Asp Pro Leu His Pro Thr Glu Thr Arg Cys Val Asp Gly Arg
 270 275 280

gac act ctg gag tgg gac atc tgt gcc tcc aat ggg atc aca cat gtc 1095
 Asp Thr Leu Glu Trp Asp Ile Cys Ala Ser Asn Gly Ile Thr His Val
 285 290 295

att tcc agg yct tta aaa gca ccc cct gcc ccc gtg acc ttg ncc cac 1143
 Ile Ser Arg Xaa Leu Lys Ala Pro Pro Ala Pro Val Thr Leu Xaa His
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 Thr Xaa Leu Gly Xaa Gly Ile Phe Xaa Xaa Ile Ile Leu Val Thr Gly
 320 325 330

gct gtt gcc ttg gct gct tac tcc tac ttt cgg ata aac cgg aaa aca 1239
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atc ggc ttc can cat ttt ga 1259
 Ile Gly Phe Xaa His Phe
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Leu Gln Asp Asn Gly Gln Cys His Ala Asp Ala Lys Cys Val Asp Leu
 35 40 45

His Phe Gln Asp Thr Thr Val Gly Val Phe His Leu Arg Ser Pro Leu
 50 55 60

Gly Gln Tyr Lys Leu Thr Phe Asp Lys Ala Arg Glu Ala Cys Ala Asn
 65 70 75 80

Glu Ala Ala Thr Met Ala Thr Tyr Asn Gln Leu Ser Tyr Xaa Gln Lys
 85 90 95

Ala Lys Tyr His Leu Cys Ser Ala Gly Trp Leu Glu Thr Gly Arg Val
 100 105 110

Ala Tyr Pro Thr Ala Phe Ala Ser Gln Asn Cys Gly Ser Gly Val Val
 115 120 125

Gly Ile Val Asp Tyr Gly Pro Arg Pro Asn Lys Ser Glu Met Trp Asp
 130 135 140

Val Phe Cys Tyr Arg Met Lys Asp Val Asn Cys Thr Xaa Lys Val Gly
 145 150 155 160
 Tyr Val Gly Asp Gly Phe Ser Tyr Ser Gly Asn Leu Leu Gln Val Leu
 165 170 175
 Met Ser Phe Pro Ser Leu Thr Asn Phe Leu Thr Glu Val Leu Ala Tyr
 180 185 190
 Ser Asn Ser Ser Ala Arg Gly Arg Ala Phe Leu Glu His Leu Thr Asp
 195 200 205
 Leu Ser Ile Arg Gly Thr Leu Phe Xaa Pro Gln Asn Ser Gly Leu Gly
 210 215 220
 Glu Asn Glu Thr Leu Ser Gly Arg Asp Ile Glu His His Leu Ala Asn
 225 230 235 240
 Val Ser Met Phe Phe Tyr Asn Asp Leu Val Asn Gly Thr Thr Leu Gln
 245 250 255
 Thr Arg Leu Gly Ser Lys Leu Leu Ile Thr Asp Arg Gln Asp Pro Leu
 260 265 270
 His Pro Thr Glu Thr Arg Cys Val Asp Gly Arg Asp Thr Leu Glu Trp
 275 280 285
 Asp Ile Cys Ala Ser Asn Gly Ile Thr His Val Ile Ser Arg Xaa Leu
 290 295 300
 Lys Ala Pro Pro Ala Pro Val Thr Leu Xaa His Thr Xaa Leu Gly Xaa
 305 310 315 320
 Gly Ile Phe Xaa Xaa Ile Ile Leu Val Thr Gly Ala Val Ala Leu Ala
 325 330 335
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 340 345 350
 Phe

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 Gln Ala Ala Gly Val Tyr His Arg Glu Ala Arg Ala Gly Arg Tyr Lys
 35 40 45

Leu Thr Tyr Ala Glu Ala Lys Ala Val Cys Glu Phe Glu Gly Gly Arg
 50 55 60

Leu Ala Thr Tyr Lys Gln Leu Glu Ala Ala Arg Lys Ile Gly Phe His
 65 70 75 80

Val Cys Ala Ala Gly Trp Met Ala Lys Gly Arg Val Gly Tyr Pro Ile
 85 90 95

Val Lys Pro Gly Pro Asn Cys Gly Phe Gly Lys Thr Gly Ile Ile Asp
 100 105 110

Tyr Gly Ile Arg Leu Asn Arg Ser Glu Arg Trp Asp Ala Tyr Cys Tyr
 115 120 125

Asn Pro His Ala Lys Glu Cys Gly Gly Val Phe Thr Asp Pro Lys Arg
 130 135 140

Ile Phe Lys Ser Pro Gly Phe Pro Asn Glu Tyr Asp Asp Asn Gln Val
 145 150 155 160

Cys Tyr Trp His Ile Arg Leu Lys Tyr Gly Gln Arg Ile His Leu Ser
 165 170 175

Phe Leu Asp Phe Asp Leu Glu His Asp Pro Gly Cys Leu Ala Asp Tyr
 180 185 190

Val Glu Ile Tyr Asp Ser Tyr Asp Asp Val His Gly Phe Val Gly Arg
 195 200 205

Tyr Cys Gly Asp Glu Leu Pro Glu Asp Ile Ile Ser Thr Gly Asn Val
 210 215 220

Met Thr Leu Lys Phe Leu Ser Asp Ala Ser Val Thr Ala Gly Gly Phe
 225 230 235 240

Gln Ile Lys Tyr Val Thr Val Asp Pro Ala Ser Lys Ser Ser Gln Ala
 245 250 255

Lys Asn Thr Ser Thr Thr Gly Asn Lys Lys Phe Leu Pro Gly Arg Phe
 260 265 270

Ser His Leu
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44

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